



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

H.A

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,082	06/25/2003	Jeremy R. Myles	5513P012	6537

45288 7590 12/01/2006

VARIAN/BLAKELY
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

KAO, CHIH CHENG G

ART UNIT PAPER NUMBER

2882

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/607,082	MYLES, JEREMY R.	
	Examiner	Art Unit	
	Chih-Cheng Glen Kao	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 6-9, 19, 21-27, 29, 32, 34-40, 42-46, 48-52 and 56-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19, 21-27, 29, 32, 34-40 and 42 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-9, 43-46, 48-52 and 56-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 27, 2006, has been entered.

Claim Objections

2. Claim 57 is objected to because of the following informalities, which appear to be minor draft errors including grammatical and/or lack of antecedent basis problems.

In the following format (location of objection; suggestion for correction), the following correction(s) may obviate the objection(s): (claim 57, line 5, "the gantry head"; replacing "the" with - -a- -).

For purposes of examination, the claims have been treated as such. Appropriate correction is required.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Art Unit: 2882

3. Claims 1-4, 6-9, 43-46, and 48-51 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are directed toward a computer implemented method, system, and/or medium involving computational data. Though the adjusting of treatment plans are relative to physical properties, the data is none-the-less generated within a computer without a physical manifestation. Thus, these claims do not produce a final result, which meet the standard of being concrete, tangible, and useful.

The claims must be for a practical application of the abstract idea, law of nature, or natural phenomenon. See *Diehr*, 450 U.S. at 187, 209 USPQ at 8 (“application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection”) and *Benson*, 409 U.S. at 71, 175 USPQ at 676 (rejecting formula claim because it “has no substantial practical application”).

To satisfy section 101 requirements, the claim must be for a practical application of the 101 judicial exception, which can be identified in various ways:

1) The claimed invention “transforms” an article of physical object to a different state or thing.

2) The claimed invention otherwise produces a useful, concrete, and tangible result, based on the factors discussed in MPEP 2106. See also:

http://www.uspto.gov/web/offices/pac/dapp/opla/preognotice/guidelines101_20051026.pdf.

The manipulation of data to adjust a treatment plan is performed by the computer implementing programs and is therefore nonstatutory subject matter. Manipulation of data does not include a physical transformation outside of a computer or representation thereof. A process

Art Unit: 2882

consisting solely of mathematical operations, i.e., converting one set of numbers into another set of numbers, does not manipulate appropriate subject matter, is not deemed to be concrete, tangible, and useful, and is therefore non-statutory.

An example which would make the instant claims statutory would be to include a step of saving the adjusted treatment plan. Hence, the final result would become concrete, tangible, and useful.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 56 and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Bailey et al.

(US 2003/0048868).

5. Regarding claim 56, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), a patient support (fig. 1, #60), a radiation detector (fig. 1, #24), wherein said radiation source (fig. 1, #22a) is at a fixed position relative to the gantry (fig. 1, #18), and wherein said system comprises a simulation component (paragraph 37, lines 1-3).

Note that recitations (i.e., “that simulates a distance between a patient and a treatment source in a treatment machine”) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114.

6. Regarding claim 60, Bailey et al. discloses a system comprising a gantry (fig. 1, #18) having a radiation source (fig. 1, #22a), said gantry having an axis of rotation (fig. 1, #16), a patient support (fig. 1, #60), and a radiation detector (fig. 1, #24), wherein a distance from said radiation source (fig. 1, #22a) to said axis of rotation (fig. 1, #16) is a fixed distance.

Note that recitations (i.e., “a fixed distance that simulates a treatment source to treatment system axis of rotation of a linear accelerator treatment system”) with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from prior art if the prior art teaches all the structural limitations of the claim. See MPEP 2114.

7. Claim 57 is rejected under 35 U.S.C. 102(b) as being anticipated by Besson et al. (US 6301325).

Besson et al. discloses a system comprising a gantry (fig. 1, #20) having a radiation source (fig. 1, #10), a patient support (fig. 1, #46), a radiation detector (fig. 1, #44), and means to move the patient support (fig. 1, #58) closer to and/or further (fig. 1, along #48) from a gantry head (fig. 1, at #10) as the gantry rotates (fig. 1) to maintain a constant distance between the

Art Unit: 2882

radiation source (fig. 1, #10) and a point (fig 1, isocenter of gantry) defined in relation to the patient support (fig. 1, #46).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey et al. in view of Jaffray et al. (US 2003/0007601) and Munro, III et al. (US 6400796).

Bailey et al. discloses a method comprising the steps of placing a patient (fig. 1, #62) on a patient support (fig. 1, #60), producing an image (fig. 1, #36) of the patient using an imager (fig. 1, #24) while on the patient support (fig. 1, #60), producing a treatment plan (paragraph 43) for placement of a radiation source (paragraph 49, lines 5-8) while the patient (fig. 1, #62) is on the patient support (fig. 1, #60), and treating the patient (fig. 1, #62) according to the treatment plan on the patient support (fig. 1, #60).

However, Bailey et al. fails to disclose a flat panel imager and a radiation source in a patient.

Jaffray et al. teaches a flat panel imager (abstract). Munro, III et al. teaches a radiation source in a patient (col. 2, lines 10-20).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Bailey et al. with the imager of Jaffray et al., since

Art Unit: 2882

one would have been motivated to make such a modification for enhancing spatial resolution (paragraph 91) as shown by Jaffray et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the method of Bailey et al. with the radiation source inside the patient of Munson, III et al., which is explained with motivation as follows. Munson, III et al. shows that external and internal radiation sources are recognized equivalents known in the art (col. 2, lines 10-35). Therefore, because these two radiation sources were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute one type of radiation source for another. One would have been motivated to make such a modification to reduce radiation exposure to healthy tissue.

9. Claims 58 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US 6535574) in view of Toshiba ("Clinical Performance: Delivering upon the Promise of Multi-slice CT through Proven Performance").

Collins et al. discloses a system comprising a gantry (fig. 1, #210) having a radiation source (fig. 1, #215), a patient support (fig. 1, #230), and a radiation detector (fig. 1, #240), wherein the gantry comprises a single frame, wherein the frame comprises a first elongated portion and a second elongated portion disposed at an angle to one another (fig. 1, #210), and wherein the gantry, the patient support, and the radiation detector are electronically coupled (fig. 2).

However, Collins et al. fails to disclose aluminum casting.

Toshiba teaches aluminum casting (page 3, col. 1, lines 28-31).

Art Unit: 2882

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to modify the system of Mori et al. with the aluminum casting of Toshiba, since one would have been motivated to make such a modification to reduce vibrations (page 3, col. 1) as implied from Toshiba.

Allowable Subject Matter

10. Claims 19, 21-27, 29, 32, 34-40, and 42 are allowed. The following is a statement of reasons for the indication of allowable subject matter.

11. Regarding claim 19, prior art fails to disclose or fairly suggest a method of adjusting a radiotherapy simulator system, including automatically adjusting one or more components of the radiotherapy simulator system based on an input associated with a digital image, in combination with all the limitations in the claim. Claims 21-24 are allowed by virtue of their dependency.

12. Regarding claim 25, prior art fails to disclose or fairly suggest a method of adjusting a treatment plan, including wherein a digital image is generated on a treatment simulator system, and recalculating a treatment plan based on input associated with the digital image, in combination with all the limitations in the claim. Claims 26, 27, and 29 are allowed by virtue of their dependency.

13. Regarding claim 32, prior art fails to disclose or fairly suggest a machine-readable medium having instructions to cause a machine to perform a method of adjusting a radiotherapy

Art Unit: 2882

simulator system, including automatically adjusting one or more components of the radiotherapy simulator system based on an input associated with a digital image, in combination with all the limitations in the claim. Claims 34-37 are allowed by virtue of their dependency.

14. Regarding claim 38, prior art fails to disclose or fairly suggest a machine-readable medium having instructions to cause a machine to perform a method of adjusting a treatment plan, the method including wherein a digital image is generated on a treatment simulator, and recalculating a treatment plan based on input associated with the digital image, in combination with all the limitations in the claim. Claims 39, 40, and 42 are allowed by virtue of their dependency.

Response to Arguments

15. Applicant's arguments with respect to claims 1-4, 6-9, 43-46, 48-52, 56, 57, and 60 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed July 27, 2006, have been fully considered but they are not persuasive.

16. Regarding claims 58 and 59, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Art Unit: 2882

Collins et al. discloses a single frame gantry having two portions at an angle. Toshiba teaches a cast frame gantry. Therefore, the combination of references suggests a single cast (Toshiba) frame gantry having two portions at an angle (Collins et al.).

Applicant further argues that the motivation to combine Toshiba with Collins et al. is improper, since a practitioner in the art would not be motivated to use a cast gantry to reduce vibrations of Collins et al. because the gantry of Collins et al. does not experience the vibrations of concern in Toshiba. The examiner disagrees. Even if the gantry of Collins et al. does not experience the same vibrations of concern in Toshiba, any vibrations are always a concern in mechanical systems, such as vibrations in rotating gantries. The reduction of vibrations reduces the amount of energy needed to actuate mechanical systems with moving parts in general, and more specifically increases the accuracy of positioning the radiation beam with gantries. Therefore, in the continual pursuit of reducing vibrations in mechanical systems, a practitioner in the art would be motivated to look at Toshiba in order to reduce any vibrations in the rotating gantry of Collins et al. for the purposes of reducing the amount of energy needed for rotating the gantry and for increasing the position accuracy of the radiation beam.

In conclusion, Applicant's arguments are not persuasive, and the claims remain rejected.

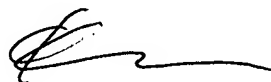
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

Art Unit: 2882

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Chih-Cheng Glen Kao
Examiner
Art Unit 2882